DoD: AFTO 31P1-4-108-629

UPGRADE RPG HARDWARE FOR FUTURE DIGITAL OR FRAME RELAY COMMUNICATIONS

DOPPLER METEOROLOGICAL RADAR WSR-88D

PUBLISHED UNDER AUTHORITY OF THE SECRETARIES OF
COMMERCE, THE AIR FORCE, THE NAVY, AND TRANSPORTATION

Data Code: 3119816
Issuance Date: 1 July 2004
NWS/DoD Rescission Date: 1 August 2005

DoD APPROVAL:

BY ORDER OF THE SECRETARY OF THE AIR FORCE

JOHN P. JUMPER, General, USAF
Chief of Staff

_____**Date** _____

Edward L. Berkowitz, Chief
Program Branch
Radar Operations Center
TOMA

1. SUBJECT

Upgrade Radar Product Generator (RPG) Hardware for Future Digital or Frame Relay Communications.

2. PURPOSE

This routine modification provides hardware installation instructions to upgrade the RPG for future implementation of digital or frame relay communications. The authority for this modification is Radar Operations Center (ROC) Engineering Change Proposal (ECP) 0177, Upgrade RPG for Digital or Frame Relay Communications.

For additional information concerning this document, contact the Radar Operations Center (ROC) Hotline, Norman, OK; phone number: (800) 643-3363 or (405) 573-8900 or by e-mail at NEXRAD.Hotline@noaa.gov. An electronic copy of this document can be found at the following Internet address:
www.roc.noaa.gov/ssb/sysdoc/techman/tmlinks.asp

3. SITES AFFECTED

See ATTACHMENT 2.

4. ESTIMATED COMPLETION DATE

This modification must be reported completed no later than 60 days after the date the kit was shipped from the National Logistics Support Center (NLSC).

5. EQUIPMENT AFFECTED

Radar Product Generator Group.

6. SPARES AFFECTED

Not applicable.

7. MODIFICATION ACCOMPLISHED BY

Site electronics technicians will perform this modification. Two technicians are required to perform this action.

8. MATERIAL REQUIRED

Nomenclature	Part Number	NSN	Qty
2 port 10/100 Ethernet WAN Card Slot Module	2210022-204	5998-01-479-8737	1
1-Port T1/Fractional T1 DSU/CSU WAN Interface Card	2210022-202	NWS0-21-280-0002	1
Cable, Patch Cord - (10')	2210033-201	NWS0-11-360-0001	1
Surge Suppressor	2200140-201	6110-01-508-8011	1
Marker Sleeve Kit, Power	2340010		1

9. SOURCE OF MATERIALS

Kits are requisitioned by the ROC Retrofit Management Team and shipped at no cost to the site.

10. SPECIAL TOOLS AND TEST EQUIPMENT REQUIRED

Not applicable.

11. TIME AND PERSONNEL REQUIRED

Work Phases	Work-hours
Unpacking	0.5
Disassembly	0.25
Installation	0.25
Assembly	0.0
Operational Check	0.5
Total Work-hours	1.5

12. DOCUMENTS AFFECTED

a. Technical Manual, System Description, Revision 4, dated 31 March 2003.
NWS: EHB 6-500, Change 1
DoD: AF TO 31P1-4-108-1, Change 1
FAA: TI 6345.1 V1, Change 1
Navy: EM 400-AA-MMM-010/WSR88D, Change 1

b. Technical Manual, Illustrated Parts Breakdown (IPB), Revision 7, dated 31 October 2003.
NWS: EHB 6-501, Change 1
DoD: AF TO 31P1-4-108-4, Change 1
FAA: TI 6345.1 V2, Change 1
Navy: EM 400-AB-IPB-010, Change 1

c. Technical Manual, Work Unit Code, Revision 1, dated 1 November 2001.
NWS: EHB 6-502, Change 3
DoD: AF TO 31P1-4-108-06, Change 3
FAA: TI 6345.1 V3, Change 3
Navy: EM 400-AC-WUC-010, Change 3

d. Technical Manual, Inspection, Lubrication, and Maintenance Requirements, Revision 2, dated 1 June 2002.
NWS: EHB 6-503, Change 3
DoD: AF TO 31P1-4-108-6, Change 3
FAA: TI 6345.1 V4, Change 3
Navy: EM 400-AM-MOO-010, Change 3

e. Technical Manual, Preventive Maintenance Inspection Work Cards, Revision 3, dated 15 May 2002.
NWS: EHB 6-503-2, Change 2
DoD: AF TO 31P1-4-108-6WC-8, Change 2
FAA: TI 6345.1 V4, Change 2

f. Maintenance Instructions, Radar Product Generator (RPG), Revision 1, dated 30 April 2003.
NWS: EHB 6-525, Change 2
DoD: AF TO 31P1-4-108-452-1, Change 2
FAA: TI 6345.1 V49, Change 2

g. Operations Instructions, Radar Product Generation (RPG), Revision 2, dated 29 March 2004.
NWS: EHB 6-526
DoD: AF TO 31P1-4-108-451-1
FAA: TI 6345.1 V50

13. VERIFICATION STATEMENT

This modification was successfully installed at the Radar Operations Center.

14. DISPOSITION OF REMOVED AND REPLACED PARTS/MATERIALS

Retain the blank filler panel for WAN interface card slot to reinstall in the event it is needed.

15. PROCEDURES

Perform the procedures in ATTACHMENT 1.

16. FAA DISTRIBUTION

Not applicable.

17. CHANGES TO TABLE OF CONTENTS (FAA)

Not applicable.

18. RECOMMENDATIONS FOR CHANGES (FAA)

Not applicable.

19. REPORTING INSTRUCTIONS

Update the AFTO Form 95 to show TCTO compliance. Report TCTO compliance in accordance with TO 00-20-2, Table 3-10, Rule 9.

Complete ATTACHMENT 3 and return the information to the ROC by one of the four methods below:

(1) Mail Address: Program Branch, Retrofit Management Team
WSR-88D Radar Operations Center
3200 Marshall Ave., Suite 101
Norman, Oklahoma 73072-8028

(2) Fax Number: (405) 573-3480
ATTN: Retrofit Management Team

(3) E-mail Address: NEXRAD.Logistics@noaa.gov

(4) Web Version: http://www.roc.noaa.gov/ssb/logistics/completion.asp

ATTACHMENT 1

WAN INTERFACE CARD INSTALLATION PROCEDURES

Tools/Materials Required:

Screwdriver set, flat-tip

Screwdriver set, Phillips-tip

Component Handling Kit (conductive mat and wrist strap)

Tie wraps (provided by site)

Initial Conditions/Preliminary Setup:

1. Send a Free Text Message (FTM) to WSR-88D Unit interface(s). The FTM can be generated through the Master System Control Function (MSCF). Messages should be designated to all WSR-88D Unit interfaces to notify the users of radar downtime due to maintenance.

   a. At the MSCF, click on the **Outgoing Messages** area of the window to activate it. Clicking on the **Clear** button at this point will completely clear out the Outgoing Messages area of any text that might be left from the previous outgoing message.

   b. Enter the desired message such as radar maintenance required. Estimated downtime ½ hour.

   c. Select the destination(s) for the outgoing message. This is accomplished in the `Destinations` area of the window by clicking on the box next to the desired destination(s) which places a check mark in the box. The outgoing message is sent only to the destination selection(s) that have a check mark present in the box. The **All** selections in each Class area are a toggle that alternately selects and deselects all of the destinations within that Class.

   d. Click on the **Send** button to send the outgoing message to the selected destination(s). If a destination is not selected prior to clicking on the **Send** button, a `warning_popup` window appears as a reminder to select a destination.

   e. Click on the **Close** button to close the `Console Messages` window.

2. Open the RPGPCA cabinet doors and locate the Router UD70A2. (Refer to Figure 1 for router location.)

CAUTION

Failure to perform step 3 could cause serious damage to the router and or modules installed in the router.

3. At the back of the Router, turn the power switch to **OFF**.

WARNING

Lethal voltages (from commercial power, CRTs, high voltage power supplies, and low voltage, high current power supplies) are present in much of the RPG Group equipment. Observe appropriate safety precautions at all times to ensure personnel safety.

****ESD** CAUTION **ESD****

All WSR-88D internal LRU components are Electro Static Devices (ESD) and must be handled using the special ESD handling procedures given below. Component Handling Kit (conductive mat and wrist strap) and a suitable conductive bag are required to provide proper component protection. Use the following procedure during the performance of this modification.

Installation Procedure.

1. Put the ESD wrist strap on bare wrist and connect clip the lead to the chassis frame or proper ground.

2. Locate the modules installed in the back of the Router UD70A2. (Refer to Figure 1 for the router location, and Figure 2 for the router module locations.) Module 0 (UD70/170A2A1A0) is the bottom right module. Module 1 (UD70/170A2A1A1) is the bottom left module. The module number is engraved on the router case and may be difficult to see.

3. On Module 1 (UD70/170A2A1A0) on the back of the router:

   a. Loosen the captive screws that hold the blank filler panel installed in Network Module Slot 1.

   b. Remove part number 2210022-204, the 2-Port 10/100 Ethernet Wan Card Slot Module from its conductive package.

   c. Hold the Ethernet WAN Card by the edges and line the card up with the guides on either side of the network Module Slot 1.

   d. Insert the card in the slot and push it in until it is firmly seated in the connector and the card's front panel is flush with the router's rear panel and tighten the captive screws that are in the card.

WAN INTERFACE CARD INSTALLATION PROCEDURES

e. Remove the screws that hold the blank filler panel for WAN interface card slot W0 installed in Network Module Slot 1 of the two port Ethernet module and remove the metal covering plate.

f. Remove part number 2210022-202, the 1-Port T1/Fractional T1 DSU/CSU Wan Interface Card from its conductive package.

g. Hold the WAN Interface Card by the edges and line the card up with the guides on either side of the WAN interface card slot W0.

h. Insert the card in the slot and push it in until it is firmly seated in the connector and the card's front panel is flush with the router's rear panel and tighten the captive screws that are in the card.

i. Connect the male end of the surge protector (P1 equipment port) to the WIC port.

4. Connect the female end (P2 line port) of the surge protector (E2) to 70/170W261 (the 10' patch cord) P2 end.

5. Connect the P1 end of cable 70/170W261 inside the I/O Panel at CP11.

6. Attach the ground cable to the right captive screw of the module just installed.

7. Tie wrap the newly installed surge suppressor to the bottom rail of the network module.

8. Tie wrap cable W261 for a clean installation.

NOTE

An amber light on the new module will be light when the power to the router is applied. This is normal, since no connect is made. This module is being installed for a future modification.

9. Turn the Router power switch to **ON** to complete the installation. No additional setup procedures for the router are required.

10. Disconnect the ESD wrist strap and observe the system has returned to normal operation.

11. Refer to step 1 to send a Free Text Message (FTM) to WSR-88D Unit interface(s) to notify them that radar maintenance is complete.

ATTACHMENT 1 (Continued)

WAN INTERFACE CARD INSTALLATION PROCEDURES

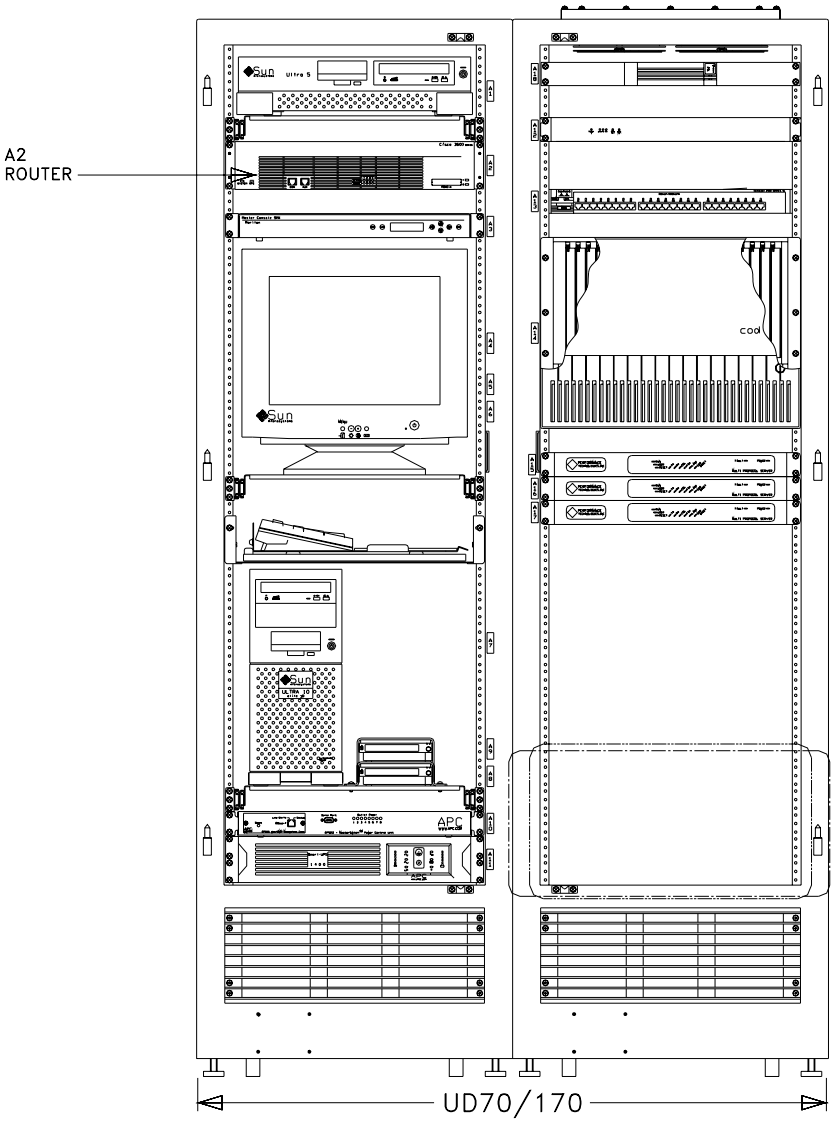

Figure 1. Router Location

WAN INTERFACE CARD INSTALLATION PROCEDURES

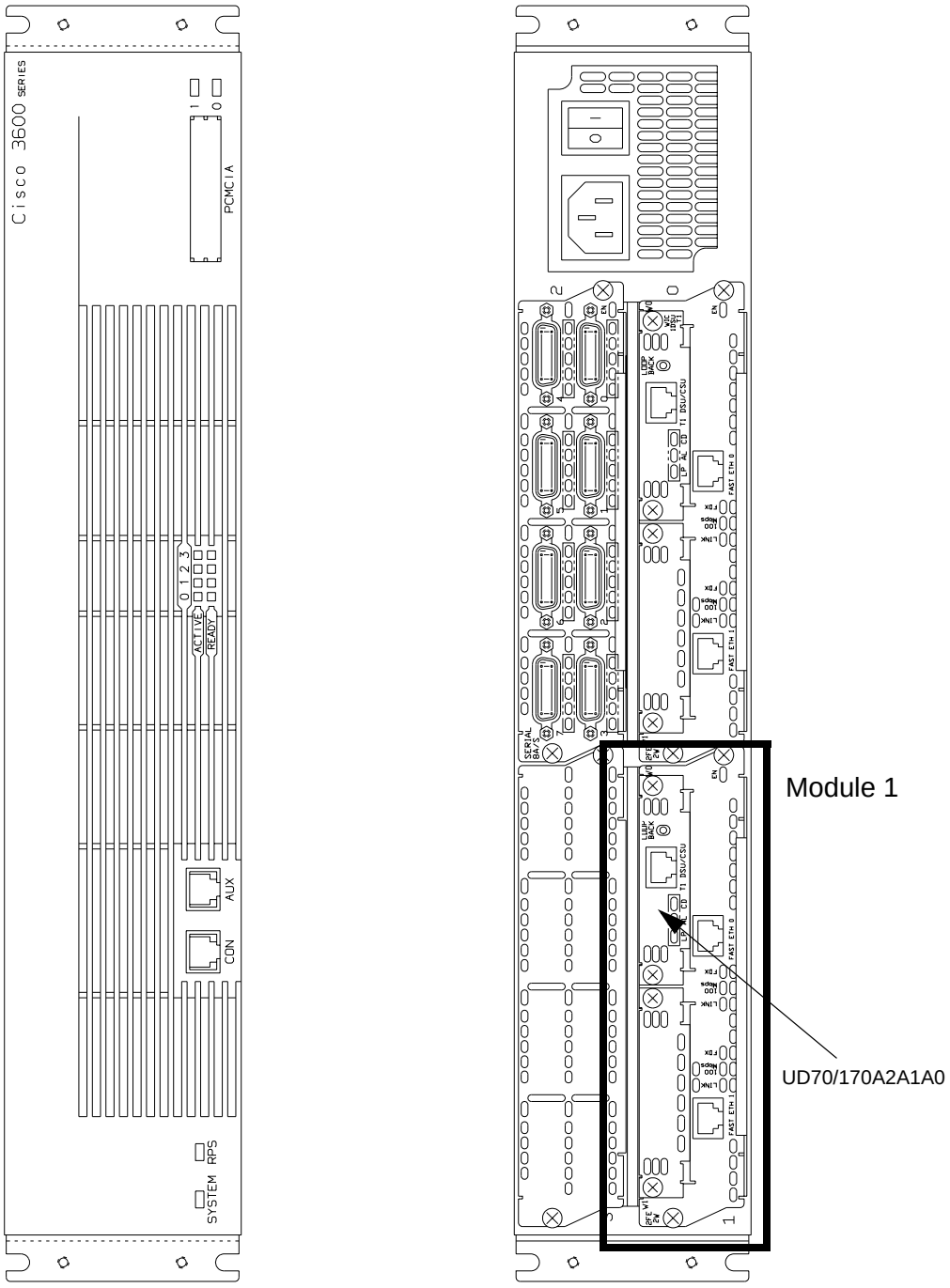

Figure 2. Router Module Location

DoD

NEXRAD Site Name	City, ST	EQP	SID	ORG Code
ANDERSEN AFB	ANDERSEN AFB, GU	RPG	UAM	FE5240
CAMP HUMPHREYS	CAMP HUMPHREYS, KO	RPG	KSGR4	FI5294
KADENA AB	KADENA AB, JA	RPG	ODNR5	FH5270
KEESLER AFB MNTC TRNG B	KEESLER AFB, MS	RPG	BIX	FE3010
KEESLER AFB MNTC TRNG A	KEESLER AFB, MS	RPG	BIX	FE3010
KUNSAN AB	KUNSAN AB, KO	RPG	KJKR4	FH5284
LAJES AB	SANTA BARBARA, AZR	RPG	PLAL3	FE4486
ROC DOD RPG (KREX)	NORMAN, OK	RPG		WG9420

DoD: TO 31P1-4-108-629

ATTACHMENT 3

FRAME RELAY HARDWARE AND SOFTWARE MODIFICATION COMPLETION FORM

Site Name: _____

Site Identifier: _____

Total Time to Complete this Modification Document: _____

Technician's Name(s): _____

Technician's Phone Number: _____

Date Completed: _____

Problem(s) Encountered:

_____

_____

_____

_____

Upon completion of this form, return the information to the ROC using one of the four methods below:

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   WSR-88D Radar Operations Center
   3200 Marshall Ave., Suite 101
   Norman, OK 73072-8028

2. FAX Number: (405) 573-3480
   ATTN: Retrofit Management Team

3. E-mail Address: NEXRAD.Logistics@noaa.gov

4. Web Version: http://www.roc.noaa.gov/ssb/logistics/complete/